



SEW
EURODRIVE

Operating Instructions



MOVITRAC[®] LT Option Cards





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1 Important Notes



1.1 How to use the operating instructions







The operating instructions are an integral part of the product and contain important information on operation and service. The operating instructions are written for all employees who assemble, install, startup, and service this product.

The operating instructions must be accessible and legible. Make sure that persons responsible for the system and its operation, as well as persons who work independently on the unit, have read through the operating instructions carefully and understood them. Consult SEW-EURODRIVE if you have any questions or if you require further information.

1.2 Structure of the safety notes

The safety notes in these operating instructions are structured as follows:

Symbol	 SIGNAL WORD
	<p>Nature and source of danger.</p> <p>Possible consequence(s) if the safety notes are disregarded.</p> <ul style="list-style-type: none"> Measure(s) to prevent the danger.

Symbol	Signal Word	Meaning	Consequences if disregarded
Example:  General hazard	 DANGER	Imminent danger	Severe or fatal injuries
 Specific hazard, e.g. electric shock	 WARNING	Possible dangerous situation	Severe or fatal injuries
	 CAUTION	Possible dangerous situation	Minor injuries
	NOTICE	Possible damage to property	Damage to the drive system or its environment
	TIP	Useful information or tip. Simplifies the handling of the drive system.	



Important Notes

Right to claim under limited warranty

Unless the information in the operating instructions is adhered to, it will be impossible to ensure:

- Trouble-free operation
- Fulfilment of any rights to claim under guarantee

Consequently, read the operating instructions before you start working with the product!

1.3 Right to claim under limited warranty

Adhering to the operating instructions is a prerequisite for fault-free operation and the fulfillment of any right to claim under warranty. Read the operating instructions before you start working with the unit.

Make sure that the operating instructions are available to persons responsible for the system and its operation as well as to persons who work independently on the unit. You must also ensure that the documentation is legible.

1.4 Exclusion of liability

You must comply with the information contained in these operating instructions to ensure safe operation of the MOVITRAC® LT and to achieve the specified product characteristics and performance requirements. SEW-EURODRIVE does not assume liability for injury to persons or damage to equipment or property resulting from non-observance of these operating instructions. In such cases, any liability for defects is excluded.

1.5 Copyright notice

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Any reproduction, modification, distribution or unintended use, in whole or in part, is prohibited.



1.6 Waste disposal

Please dispose of the following parts in accordance with the current regulations:

- Electronics scrap (printed-circuit boards)
- Plastic (housing)
- Sheet metal
- Copper



2 Safety Notes

The following basic safety notes must be read carefully to prevent injury to persons and damage to property. The operator must ensure that the basic safety notes are read and observed. Make sure that persons responsible for the plant and its operation, as well as persons who work independently on the unit, have read through the operating instructions carefully and understood them.

If you are unclear about any of the information in this documentation, or if you require further information, please contact SEW-EURODRIVE.

2.1 Preliminary information

The following safety notes predominantly refer to the use of frequency inverters and their accessories. Additionally, when using drives with motors or gearmotors, observe the corresponding safety notes in the respective operating instructions.

Please also observe the supplementary safety notes in the individual sections of this document.

2.2 General



⚠ DANGER

During operation, frequency inverters and their accessories can have live, bare parts according to their degree of protection.

Severe or fatal injuries.

- All work related to transportation, storage, setup / mounting, connection, startup, maintenance and repair may only be carried out by qualified personnel, in strict observation of:
 - The relevant detailed operating instructions
 - The warning and safety signs on the motor / gearmotor and electronic components
 - All other project planning documents, operating instructions and wiring diagrams related to the drive
 - The specific regulations and requirements for the system
 - The national / regional regulations governing safety and the prevention of accidents
- Never install damaged products.
- Immediately report any damages to the shipping company.

Removing covers without authorization, improper use as well as incorrect installation or operation may result in severe injuries to persons or damage to property.



2.3 Target group

Any mechanical work may only be performed by adequately qualified personnel. Qualified personnel in this context are persons who are familiar with the setup, mechanical installation, trouble shooting and maintenance for this product. Further, they are qualified as follows:

- Training in mechanical engineering, e.g. as a mechanic or mechatronics technician (final examinations must have been passed).
- They are familiar with these operating instructions.

Any electronic work may only be performed by adequately qualified electricians. Qualified electricians in this context are persons who are familiar with the electronic installation, startup, trouble shooting and maintenance for this product. Further, they are qualified as follows:

- Training in electrical engineering, e.g. as an electrician or mechatronics technician (final examinations must have been passed).
- They are familiar with these operating instructions.

All work in further areas of transportation, storage, operation and waste disposal may be carried out only by persons who are trained appropriately.

2.4 Designated use

Frequency inverters and their accessories are components for controlling asynchronous AC motors. Frequency inverters are components intended for installation in electrical systems or machines. Never connect capacitive loads. Operation with capacitive loads results in over voltages and may destroy the unit.

The following standards apply, if the frequency inverters are marketed in the EU / EFTA:

- In case of installation in machines, startup of the drive inverters (meaning the start of proper use) is prohibited until it is determined that the machine meets the requirements stipulated in the EC Directive 98/37/EC (machine directive); observe EN 60204.
- Startup (i.e. the start of designated use) is only permitted under observance of the EMC (2004/108/EC) directive.
- The frequency inverters comply with the requirements of the Low Voltage Directive 2006/95/EC. The harmonized standards of the EN 61800-5-1/DIN VDE T105 series in connection with EN 60439-1/VDE 0660 part 500 and EN 60146/VDE 0558 are applied to these frequency inverters.

Observe the technical data and the connection requirements specified on the nameplate and the operating instructions.

2.4.1 Safety functions

Frequency inverters from SEW-EURODRIVE must not perform any safety functions unless the inverters are subordinate to other safety systems.

Use higher-level safety systems to ensure protection of equipment and personnel.



2.5 Transport

Immediately upon receipt, inspect the shipment for any damage that may have occurred during transportation.

Never install or start up damaged products. In the event of damage please submit a complaint to the transport company immediately.

2.6 Installation / assembly

The units must be installed and cooled according to the regulations and specifications in this documentation.

Protect the frequency inverters from excessive strain. Do not twist any components and do not modify the insulation spaces. Do not touch any electronic components or contacts.

Frequency inverters contain components that can easily be damaged by electrostatic energy and improper handling. Electric components must not be mechanically damaged or destroyed.

The unit meets all requirements for reliable isolation of power and electronics connections in accordance with UL508. All connected circuits must also satisfy the requirements for reliable isolation so as to guarantee reliable isolation.

Take suitable measures to ensure that the connected motor does not start up automatically when the inverter is switched on. To do this, connect binary inputs DI01 through DI03 to GND / 0V.

The following applications are prohibited unless the unit is explicitly designed for such use:

- Use in potentially explosive atmospheres.
- Use in environments with harmful substances:
 - Oils
 - Acids
 - Gases
 - Vapors
 - Dust
 - Radiated interference
 - Other harmful environments
- Use subject to mechanical vibration and shock loads in excess of the requirements in EN 50178.
- Use in non-stationary applications which are subject to mechanical vibration and impact loads in excess of the requirements in EN 61800-5-1.
- If the inverter or its accessories perform safety functions which have to guarantee the protection of machinery and people.



2.7 Electrical connection

Observe the applicable national accident prevention guidelines when working on live frequency inverters (e.g. BGV A3 for Germany).

During installation, observe the specifications regarding cable cross sections, fusing and protective conductor connection.

Protective measures and protection devices must comply with the regulations in force (e.g. EN 60204 or EN 61800-5-1).

- Grounding the unit is a necessary protective measure.
- Overcurrent protection devices are a necessary protective measure.

2.8 Safe disconnection

The MOVITRAC® LT units and their accessories meet all requirements for safe disconnection of power and electronic connections in accordance with EN 61800-5-1. All connected circuits must also satisfy the requirements for safe disconnection.

2.9 Startup / operation

Systems with integrated frequency inverters must be equipped with additional monitoring and protection devices, as applicable, according to the relevant safety guidelines and regulations, such as legislation governing technical equipment, accident prevention regulations, etc.

Do not touch live components or power connections until 10 minutes after disconnecting the frequency inverters from the supply voltage because there may still be some charged capacitors. Observe the corresponding labels on the frequency inverter.

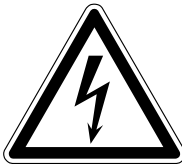

Keep all covers and doors closed during operation.

The fact that the status LED and other display elements are no longer illuminated does not indicate that the unit has been disconnected from the mains and no longer carries any voltage.

Mechanical blocking or safety functions inside the unit may result in the motor coming to a standstill. Eliminating the cause of the problem or performing a reset may result in the drive restarting automatically. If, for safety reasons, this is not permitted for the driven machine, disconnect the unit from the supply system before correcting the error.



2.10 Operation and servicing

	<p>⚠ WARNING</p> <p>Dangerous voltages are present in the output terminals and the cables and motor terminals connected to them when the unit is switched on.</p> <p>The unit is not necessarily deenergized when the LEDs and the 7-segment display are off. Dangerous voltages may also be present when the unit is inhibited and the motor at a standstill.</p> <p>High voltages are also present in the terminals and within the drive for up to 10 minutes after the electrical supply has been disconnected.</p> <p>Severe or fatal injuries from electric shock.</p> <ul style="list-style-type: none"> • Disconnect and isolate the MOVITRAC® LT from the electrical supply at least 10 minutes before commencing any work on it.
	<p>⚠ WARNING</p> <p>Safety functions inside the unit or a mechanical blockage may cause the motor to stop. The removal of the source of the malfunction or a reset can result in an automatic restart of the drive.</p> <p>Severe or fatal injuries.</p> <ul style="list-style-type: none"> • Disconnect the unit from the supply system before correcting the fault.



3 Mechanical Installation

3.1 Preliminary work

- Turn the drive off and wait at least 10 minutes before installing the option card.

	<p>⚠ WARNING</p>
	<p>Dangerous voltages are present in the output terminals and the cables and motor terminals connected to them when the unit is switched on.</p> <p>The unit is not necessarily deenergized when the LEDs and the 7-segment display are off. Dangerous voltages may also be present when the unit is inhibited and the motor at a standstill.</p> <p>High voltages are also present in the terminals and within the drive for up to 10 minutes after the electrical supply has been disconnected.</p> <p>Severe or fatal injuries from electric shock.</p> <ul style="list-style-type: none"> • Disconnect and isolate the MOVITRAC® LT from the electrical supply at least 10 minutes before commencing any work on it.

3.2 Installation procedure

- Insert the option card into the MOVITRAC® LT control terminal strip.
- Tighten all 11 terminal screws on the MOVITRAC® LT to ensure good electrical contact.

	<p>TIP</p>
	<p>When installing an option card into the following units, support the option card whilst tightening the terminal screws.</p> <ul style="list-style-type: none"> • MOVITRAC® LTP, Size 1 • MOVITRAC® LTP IP55 (all sizes) • MOVITRAC® LTE-B (all sizes)
	<p>TIP</p>
	<p>Once the option cards have been installed and fully wired into an IP55 / NEMA 12 drive, the board must be bent slightly in a downwards direction to enable the front cover to be closed. This does not affect the function of the option board.</p>

**IP20**

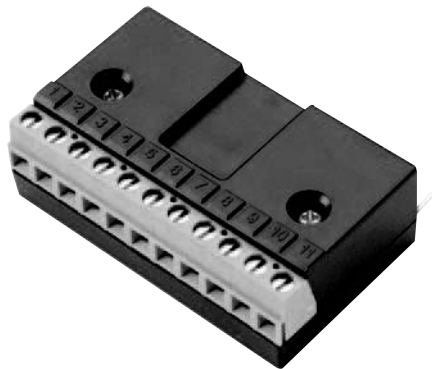
65875AXX

IP55

65874AXX

4 Second Analog Input

Type	Part number
OB LT 2ANIN	1820 1547



64759AXX

4.1 Supported unit types

	TIP
	This option is only available for MOVITRAC® LTE-A.

4.2 Overview

The second analog input can be used in applications where the speed reference for the drive is required to be switched between 2 analog references.

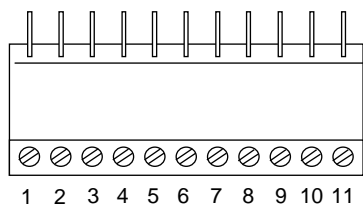
The typical application is where a drive is controlled remotely using a current reference but needs to have a local option of control, usually with a potentiometer.

4.3 Technical data

Analog input 1		DC ± 10 V, 4 – 20 mA
Analog input 1		DC ± 10 V, 4 – 20 mA
Maximum input voltage		DC ± 50 V
Ambient temperature		–10 – +50 °C
Conformity		IP00, UL94V-0
Dimensions	[mm]	56 × 24 (not pins) × 14
	[in]	2.20 × 0.98 (not pins) × 0.56



4.4 Electrical interface



64746AXX

Pin no.	Signal	Connection	Description
1	0 V	0 V common for AI	Ref. to activate DI1 – DI3 (100 mA max.)
2	DI1	Digital Input 1	Positive logic "Logic 1" input voltage range: DC 8 – 30 V "Logic 0" input voltage range: DC 0 – 2 V Compatible with PLC-requirement when 0 V is connected
3	DI 2	Digital Input 2	
4	DI3	Digital Input 3	
5	+10 V	+10 V	10 V ref for AI / DI
6	AI 1	Analog Input 1	0 – 10 V, 0 – 20 mA
7	AI 2	Analog Input 2	
8	AO / DO	Analog Output (10-bit) / Digital output	0 – 10 V, 20 mA analog 24 V / 20 mA digital
9	0 V	0 V common	0 V ref for analog output
10	Relay contact	Relay contact	N.O. relay contact (AC 250 V / DC 30 V @ 1 A)
11	Relay common	Relay common	



TIP

The signal connected to Digital Input 3 is used to switch between Analog Input 1 (terminal 6) and Analog Input 2 (terminal 7).

4.5 Operation

4.5.1 Switching between a voltage and a current speed reference

- Connect the voltage signal to terminal 6 and the current signal to terminal 7 of the option module.
 - Each of these signals is referenced to terminal 9 (0 V).
 - The digital signal used to switch between the voltage and current inputs should be connected to terminal 4 (digital input 3).
- Set the parameters as follows:
 - P-19 = 0
 - P-16 = 4 – 20 mA (or 0 – 20 mA / 20 – 4 mA, depending on required format)



TIP

When digital input 3 is open, the voltage format signal (connected to terminal 6) will be selected.

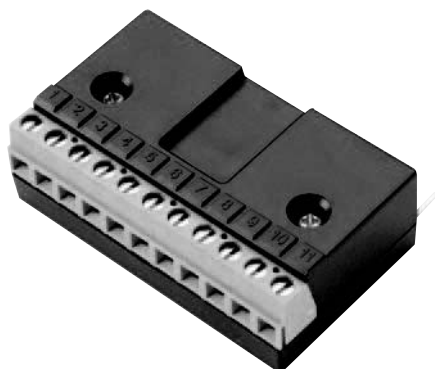
4.5.2 Hand – Off – Auto-operation

- Connect the required analog reference signals to terminals 6 and 7 as described above. This mode of operation requires a 2-pole change-over, centre-off switch.
 - The first pole of the switch is used to enable the drive, where both "Hand" and "Auto" positions should be connected to digital input 1.
 - The second pole of the switch is connected to digital input 3, as described above.
- Connect the common connection point of each of the switches to terminal 1 (0 V).
- In a typical configuration, "Hand" will enable the drive using the voltage (local) reference, "Auto" will enable the drive using the current (remote) reference.



5 Second relay output

Type	Part number
OB LT 2ROUT	1822 3168
OB LT 2ROUTB	1820 1555



64759AXX

5.1 Supported unit types

This option is available in 2 versions:

- OB LT 2ROUT for MOVITRAC® LTE-A
- OB LT 2ROUTB for MOVITRAC® LTE-B and MOVITRAC® LTP

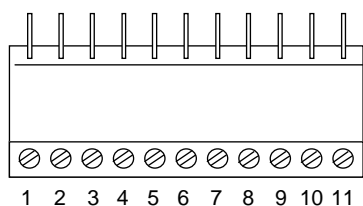
5.2 Overview

The 2nd relay output module can be used in applications where the analog output from the drive is converted to a relay output.

Typical applications are where 2 relay outputs are required. The functions of the relays are programmable in the drive and can be any of the following:

- Drive enabled
- Drive healthy
- Drive at set speed
- Drive at zero speed
- Drive at maximum speed
- Motor in overload

5.3 Electrical interface



64746AXX

Terminal no.	Signal	Connection	Description
1	+24 V	+24 V ref out	Ref. to activate DI1 – DI3 (100 mA max.)
2	DI 1	Digital input 1	Positive logic "Logic 1" input voltage range: DC 8 – 30 V "Logic 0" input voltage range: DC 0 – 2 V Compatible with PLC requirement when 0 V is connected.
3	DI 2	Digital input 2	
4	DI 3	Digital input 3 / thermistor contact	
5	+10 V	+10 V ref out	10 V ref for analog input (pot supply +, 10 mA max., 1 K Ω min.)
6	AI / DI	Analog input (12 bit) Digital input 4	0 – 10 V, 0 – 20 mA, 4 – 20 mA "Logic 1" input voltage range: DC 8 – 30 V
7	0 V	0 V common	0 V ref for analog input (pot supply –)
8	Relay 2 contact	Relay contact	N.O. relay contact (AC 250 V / DC 30 V @ 1 A)
9	Relay 2 common	Relay common	
10	Relay 1 contact	Relay contact	N.O. relay contact (AC 250 V / DC 30 V @ 1 A)
11	Relay 1 common	Relay common	



TIP

The second relay output contacts are available on terminals 8 & 9. This relay utilises the drive's analog / digital output for operation. Therefore the analog input is not available when this module is fitted.

5.4 Technical data

Max. relay switching voltage		AC 250 V / DC 220 V
Max. relay switching current		1 A
Max. input voltage		DC ±50 V
Conformity		IP00, UL94V-0
Environmental		−10 – +50 °C
Dimensions	[mm]	56 × 24 (not pins) × 14
	[in]	2.20 × 0.98 (not pins) × 0.56



5.5 Operation

5.5.1 Operation MOVITRAC® LTE-A (OB LT 2ROUT)

Programming the first relay output

Since the first relay output is programmed using parameter P-18 in MOVITRAC® LTE-A, 2 completely independent relay outputs are available. The following options are supported for relay 1:

P-18	Relay 1 output function select
0: Drive enabled	Defines the function of User Relay 1 when the operating conditions are met. <ul style="list-style-type: none"> • Disabled: Contacts open • Enabled: Contacts closed
1: Drive healthy	
2: Motor at target speed	
3: Motor speed at 0	
4: Motor speed at maximum (P-01)	
5: Motor overload (current > P-08)	

Programming the second relay output

The second relay output is controlled using MOVITRAC® LTE-A parameter P-25. This should be set to either 2 or 3 as described below:

P-25	Relay 2 output function select
0: Motor speed	Function not available for relay operation.
1: Motor current	
2: Drive enabled	Defines the function of User Relay 2 when the operating conditions are met. <ul style="list-style-type: none"> • Disabled: Contacts open • Enabled: Contacts closed
3: Motor at set speed	

5.5.2 Operation MOVITRAC® LTE-B (OB LT 2ROUTB)

Programming the first relay output

Since the first relay output is programmed using parameter P-18 in MOVITRAC® LTE-B, 2 completely independent relay outputs are available. The following options are supported for relay 1:

P-18	Relay 1 output function select
0: Drive enabled	Defines the function of User Relay 1 when the operating conditions are met. <ul style="list-style-type: none"> • Disabled: Contacts open • Enabled: Contacts closed
1: Drive healthy	
2: Motor at target speed	
3: Drive tripped	
4: Motor speed \geq limit	Options 4 – 7: The relay output is enabled using the level set in parameter P-19.
5: Motor current \geq limit	
6: Motor speed < limit	
7: Motor current < limit	



Programming the second relay output

The second relay output is controlled using MOVITRAC[®] LTE-B parameter P-25. This can be set to any of the choices 0 – 7 as described below:

P-25	Relay 2 output function select
0: Drive enabled	Defines the function of User Relay 2 when the operating conditions are met. <ul style="list-style-type: none"> • Disabled: Contacts open • Enabled: Contacts closed
1: Drive healthy	
2: Motor at target speed	
3: Drive tripped	
4: Motor speed \geq limit	
5: Motor current \geq limit	
6: Motor speed < limit	
7: Motor current < limit	Options 4 – 7: The relay output is enabled using the level set in parameter P-19.

5.5.3 Operation MOVITRAC[®] LTP (OB LT 2ROUTB)

Programming the first relay output

Since the first relay output is programmed using parameter P2-13 in MOVITRAC[®] LTP, 2 completely independent relay outputs are available. The following options are supported for relay 1:

P2-13	Relay 1 output function select
0: Drive enabled	If P2-15 = 0 (Normally Open), the relay contacts are closed when the selected condition is fulfilled.
1: Drive healthy	
2: Motor at target speed	If P2-15 = 1 (Normally Closed), the relay contacts are open when the selected condition is fulfilled.
3: Motor speed > 0	
4: Motor speed > limit	
5: Motor torque > limit	
6: 2nd analog input > limit	

Programming the second relay output

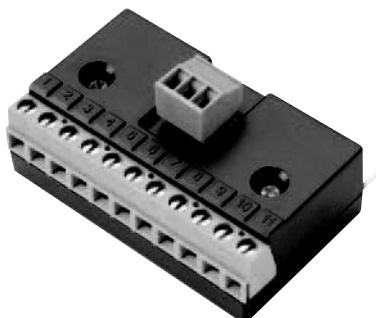
The second relay output is controlled using MOVITRAC[®] LTP parameter P2-11. This can be set to any of the choices 0 – 6 as described below:

P2-11	Relay 2 output function select
0: Drive enabled	Defines the function of User Relay 2 when the operating conditions are met. <ul style="list-style-type: none"> • Disabled: Contacts open • Enabled: Contacts closed
1: Drive healthy	
2: Motor at target speed	
3: Motor speed > 0	The control limit used for settings 4, 5 & 6 is defined in parameter P2-12.
4: Motor speed > limit	
5: Motor torque > limit	
6: 2nd analog input > limit	



6 Third relay output

Type	Part number
LT 3RO 00A	18208762



64760AXX

6.1 Supported unit types

This option is only available for MOVITRAC® LTP.

6.2 Overview

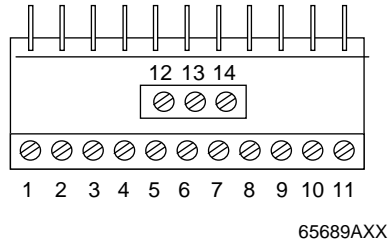
This plug-in module provides 2 additional relay outputs. Relay 1 and 2 can be programmed via parameters (see following list).

The function of the 3rd relay output is fixed to represent "Drive healthy". By using the N.O. / N.C. contacts the 3rd relay output can represent both "Drive healthy" or "Drive fault".

The functions of the 1st and 2nd relay output are programmable in the drive and can be any of the following (set in parameters P2-11 & P2-13):

- Drive enabled
- Drive healthy
- Motor at target speed
- Motor speed > 0
- Motor speed > limit
- Motor torque or motor current > limit
- 2nd analog input > limit

6.3 Electrical interface



Terminal no.	Signal	Connection	Description
1	+24 V	+24 V ref out	Ref. to activate DI1 – DI3 (100 mA max.)
2	DI 1	Digital input 1	Not affected
3	DI 2	Digital input 2	Not available if P2-01 = 20, 21 or 22
4	DI 3	Digital input 3 / thermistor contact	Not affected
5	+10 V	+10 V ref out	10 V ref for analog input (pot supply +, 10 mA max., 1 K Ω min.)
6	AI / DI	Analog input (12 bit) / Digital input 4	0 – 10 V, 0 – 20 mA, 4 – 20 mA "Logic 1" input voltage range: DC 8 – 30 V
7	0 V	0 V common	0 V ref for analog input (pot supply –)
8	Relay 2 contact	Relay contact	N.O. relay contact (AC 250 V / DC 30 V @ 1 A)
9	Relay 2 common	Relay common	
10	Relay 1 contact	Relay contact	
11	Relay 1 common	Relay common	N.O. relay contact (AC 250 V / DC 30 V @ 1 A)
12	Relay 3 contact	Relay contact	N.O. relay contact
13	Relay 3 common	Relay common	–
14	Relay 3 contact	Relay contact	N.C. relay contact

6.4 Technical data

Max. relay switching voltage		AC 250 V / DC 220 V
Max. relay switching current		1 A
Max. input voltage		DC ± 50 V
Conformity		IP00, UL94V-0
Environmental		–10 – +50 °C
Dimensions	[mm]	56 × 24 (not pins) × 14
	[in]	2.20 × 0.98 (not pins) × 0.56



6.5 Operation

Programming the first relay output

The first relay output is programmed using parameter P2-13 in the drive. The following options are supported for relay 1:

P2-13	Relay 1 output function select
0: Drive enabled	If P2-15 = 0 (Normally Open), the relay contacts are closed when the selected condition is fulfilled.
1: Drive healthy	
2: Motor at target speed	If P2-15 = 1 (Normally Closed), the relay contacts are open when the selected condition is fulfilled.
3: Motor speed > 0	
4: Motor speed > limit	
5: Motor torque / current > limit	
6: 2nd analog input > limit	

Parameter P2-15 allows the relay to be programmed to operate in N.O. (normally open) or N.C. (normally closed) mode (see corresponding operating instructions for further information).

Programming the second relay output

The second relay output is controlled using parameter P2-11 in the drive. The following options are supported for relay 2:

P2-11	Relay 2 output function select
0: Drive enabled	Defines the function of User Relay 2 when the operating conditions are met.
1: Drive healthy	
2: Motor at target speed	<ul style="list-style-type: none"> Disabled: Contacts open Enabled: Contacts closed
3: Motor speed > 0	
4: Motor speed > limit	
5: Motor torque / current > limit	
6: 2nd analog input > limit	The control limit used for settings 4, 5 & 6 is defined in parameter P2-12.

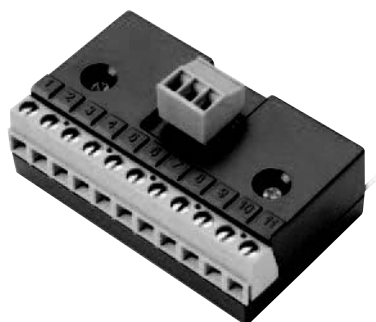
Programming the third relay output

The 3rd relay output function is fixed to represent "Drive healthy" or "Drive tripped", depending on whether the N.C. or N.O. contacts are used, and is enabled when parameter P2-01 = 20, 21 or 22.

Since the 3rd relay output is controlled by the digital output signal on Terminal 3, the 2nd digital input is not available in this mode.

7 Two indicator relay

Type	Part number
OB LT HVAC-B	1821 8180



64760AXX

7.1 Supported unit types

This option is available for the following products:

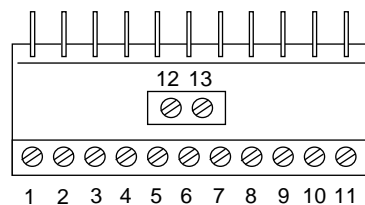
- MOVITRAC® LTE-B
- MOVITRAC® LTP

7.2 Overview

The HVAC relay option module can be used in applications where 2 indicators are required showing "Drive running" and "Drive tripped".



7.3 Electrical interface



64748AXX

Terminal no.	Signal	Connection	Description
1	+24 V	+24 V ref out	Ref. to activate DI1 – DI3 (100 mA max.)
2	DI 1	Digital input 1	Positive logic "Logic 1" input voltage range: DC 8 – 30 V "Logic 0" input voltage range: DC 0 – 2 V Compatible with PLC requirement when 0 V is connected.
3	DI 2	Digital input 2	
4	DI 3	Digital input 3 / thermistor contact	
5	+10 V	+10 V ref out	10 V ref for analog input (pot supply +, 10 mA max., 1 K Ω min.)
6	AI / DI	Analog input (12 bit) Digital input 4	0 – 10 V, 0 – 20 mA, 4 – 20 mA "Logic 1" input voltage range: DC 8 – 30 V
7	0 V	0 V common	0 V ref for analog input (pot supply –)
8	AO / DO	Analog output (10 bit) Digital output	0 – 10 V, 20 mA analog 24 V / 20 mA digital
9	0 V	0 V common	0 V ref for analog output
10	Relay 1 contact	Relay contact	N.O. relay contact (AC 250 V / DC 30 V @ 1 A)
11	Relay 1 common	Relay common	
12	Relay 2 contact	Relay contact	N.O. relay contact (AC 250 V / DC 30 V @ 1 A)
13	Relay 2 common	Relay common	

7.4 Technical data

Max. relay switching voltage	AC 250 V / DC 220 V	
Max. relay switching current	1 A	
Max. input voltage	DC ± 50 V	
Conformity	IP00, UL94V-0	
Environmental	-10 – +50 °C	
Dimensions	[mm]	56 × 24 (not pins) × 14
	[in]	2.20 × 0.98 (not pins) × 0.56

7.5 Operation in MOVITRAC® LTE-B

7.5.1 Programming the first relay output

For typical operation set parameter P-18 to 1. For example, relay 2 closed on enable (drive running, green LED) and relay 1 closed when drive tripped (red LED).

Use the following information to set parameter P-18 for other types of relay output.

Since the 1st relay output (fitted within the drive) is programmed using parameter P-18 in the drive, 2 completely independent relay outputs are available. The following options are supported for relay 1:

P-18	
0:	Relay 1 is closed when drive is disabled
1:	Relay 1 is closed when drive is tripped
2:	Relay 1 is closed when drive output is not at set speed
3:	Relay 1 is closed when drive is switched off
4:	Relay 1 is closed when drive output is not at maximum speed
5:	Relay 1 is closed when drive output is not in overload

7.5.2 Programming the second relay output

The second relay output only has 1 practical setting:

P-18	
1:	Relay 2 is closed when drive is running



TIP

The two indicator relay (HVAC) option card only operates when P-15 is set to a number where DI01 sets the enable signal for the drive, e.g. in Terminal Mode P-15 = 0 – 4, 6, 8 or 12. Further information can be found in the MOVITRAC® LTE-B Operating Instructions.

All other I/Os are not affected.



Two indicator relay Operation in MOVITRAC® LTP

7.6 Operation in MOVITRAC® LTP

7.6.1 Programming the first relay output

For typical operation set parameter P2-13 to 1. For example, relay 2 closed on enable (drive running, green LED) and relay 1 closed when drive tripped (red LED).

Use the following information to set parameter P2-13 for other types of relay output.

Since the 1st relay output (fitted within the drive) is programmed using parameter P2-13 in the drive, 2 completely independent relay outputs are available. The following options are supported for relay 1:

P2-13	
0:	Relay 1 is closed when drive is disabled
1:	Relay 1 is closed when drive is tripped
2:	Relay 1 is closed when drive output is not at set speed
3:	Relay 1 is closed when drive is switched off
4:	Relay 1 is closed when drive output is not at maximum speed
5:	Relay 1 is closed when drive output is not in overload
6:	Relay 1 is closed when 2nd analog input is below limit

7.6.2 Programming the second relay output

The second relay output only has 1 practical setting:

P2-13	
1:	Relay 2 closed when drive is running



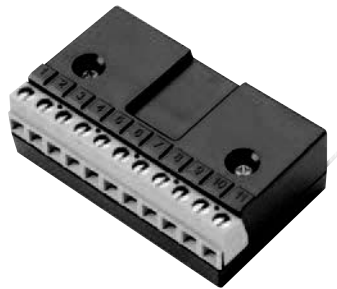
TIP

The two indicator relay (HVAC) option card only operates when P2-01 is set to a number where DI01 sets the enable signal for the drive, e.g. in Terminal Mode P2-01 = 0 – 6, 11, 12, 15, 16 or 18 – 22. Further information can be found in the MOVITRAC® LTP Operating Instructions.

All other I/Os are not affected.

8 PI Controller

Type	Part number
OB LT PICON-B	1821 8172



64759AXX

8.1 Supported unit types

This option is only available for MOVITRAC® LTE-B.

8.2 Overview

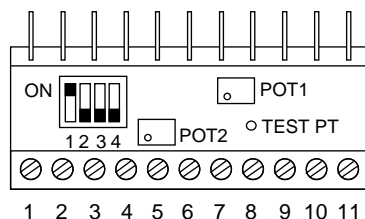
The PI controller can be used in applications where there is a transducer giving feedback from a system that the drive is controlling. For example the pressure can be controlled in a system where the drive controls a pump and a pressure transducer gives feedback to the PI controller.

Key benefits:

- Small physical size
- Potted for robustness and environmental protection
- Minimal setup for quick and easy commissioning
 - integral gain set by 2 switches
 - proportional gain set by potentiometer
- Built in reference potentiometer for convenient setup for feedback reference point.



8.3 Electrical interface



64747AXX

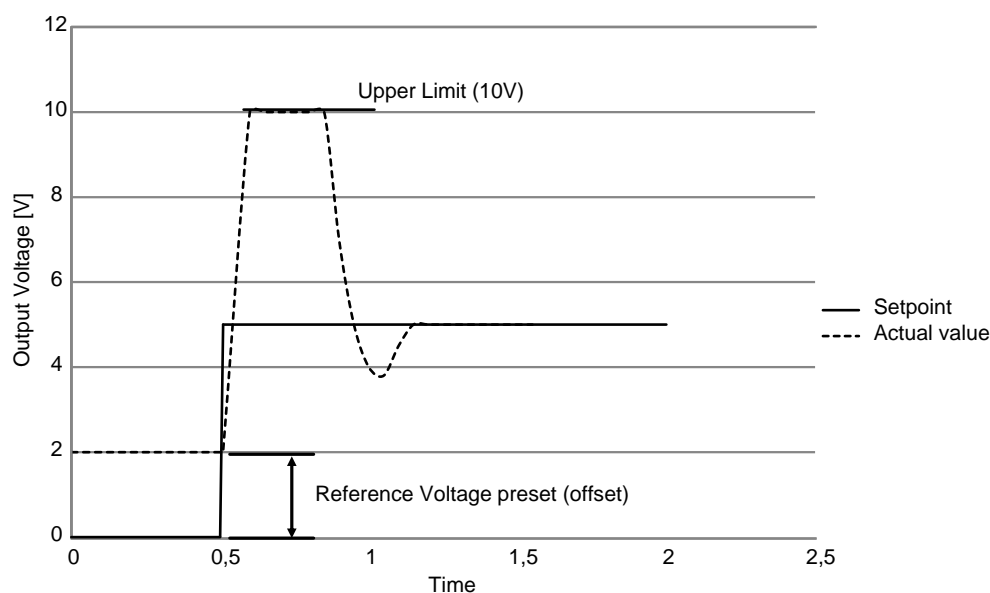
Terminal no.	Signal	Connection	Description
1	+24 V	+24 V ref out	Ref. to activate DI1 – DI3 (100 mA max.)
2	DI 1	Digital input 1	Positive logic "Logic 1" input voltage range: DC 8 – 30 V "Logic 0" input voltage range: DC 0 – 2 V Compatible with PLC requirement when 0 V is connected.
3	DI 2	Digital input 2	
4	DI 3	Digital input 3 / thermistor contact	
5	+10 V	+10 V ref out	10 V ref for analog input
6	AI1	Analog input (12 bit)	0 – 10 V, 0 – 20 mA, 4 – 20 mA
7	AF	Analog feedback in	Feedback input for PI reference
8	AO / DO	Analog output (10 bit) Digital output	0 – 10 V, 20 mA analog 24 V / 20 mA digital
9	0 V	0 V common	
10	Relay contact	Relay contact	N.O. relay contact (AC 250 V / DC 30 V @ 5 A)
11	Relay common	Relay common	

8.4 Technical data

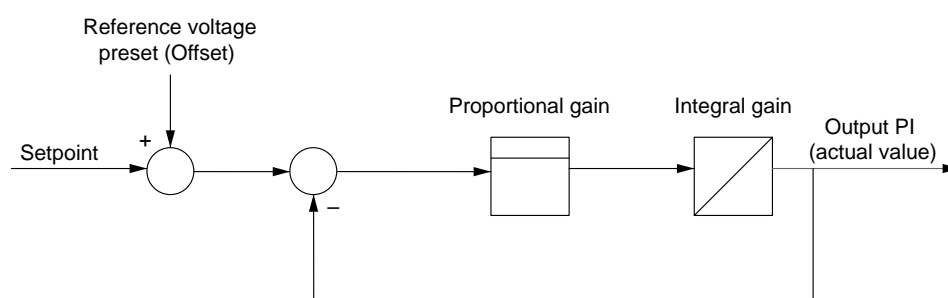
Rated reference input		± 10 V or 4 – 20 mA
Proportional gain range		0.2 – 30
Rated feedback input		± 10 V or 4 – 20 mA
Max. input voltage		DC ±50 V
Integral gain settings		0.1 s, 1 s, 10 s
Conformity		IP00, UL90V-0
Environmental		–10 – +50 °C
Dimensions	[mm]	56 × 33 (not pins) × 16
	[in]	2.20 × 1.31 × 0.64

8.5 Operation

The PI controller card must be set up by adjusting the *proportional gain*, *reference voltage preset* and *integral gain*. The following diagram shows the schematic operation of the PI controller card.



65765AEN



65771AEN

8.5.1 Potentiometer 1 (POT1): Proportional gain adjust

The proportional gain of the PI controller is adjusted using POT1. Minimum gain is achieved by turning the potentiometer fully counterclockwise (5 turns).

SEW-EURODRIVE recommends using this setting as the starting point during startup of this option with the MOVITRAC® LT in any application.



8.5.2 Potentiometer 2 (POT2): Reference voltage preset

For those applications that require a fixed preset operating point, an on-board preset potentiometer (POT2) is available to avoid having to use an external potentiometer for this type of application. To use this feature, S4 must be open (Off).

The preset voltage ranges from 0 V (fully counterclockwise) to 10 V (fully clockwise). The preset voltage can be measured on the PI Option test point .



TIP

- If an external reference is used (either voltage or current format), this potentiometer must be turned to zero (fully counterclockwise). If this is not done, an offset will be introduced by POT2.
- When the 4 – 20 mA setting is used for either the feedback (pin 7) or reference (pin 6) input and the 0 – 10 V setting is used for the other input (e.g. 0 – 10 V ref, 4 – 20 mA feedback), the voltages measured on pins 6 and 7 will be different under stable operating conditions. This is due to an offset of 2.5 V, which is introduced internally to support 4 – 20 mA operation. Control settles with the 0 – 10 V input nominally 2.5 V lower than the 4 – 20 mA input.
- Both potentiometers 1 and 2 are 5-turn types, i.e. they require 5 full turns to cover the full range. In the event of the maximum or minimum point being reached, the adjustment disengages to avoid mechanical damage. The factory setting of both POT 1 and 2 is the minimum value (turned fully counterclockwise).

8.5.3 Integral gain switch

The integral gain value can be set using switches S1 and S2 on the board. The time can be set in 3 steps (0.1 s, 1 s and 10 s). The greater integral time will take precedence if S1 and S2 are closed at the same time.

Switch no.	Switch open (OFF)	Switch closed (ON)
S1	Integral gain 0.1 s	Integral gain 1 s
S2	Integral gain 0.1 s	Integral gain 10 s
S3	Feedback format 0 – 10 V	Feedback format 4 – 20 mA
S4	Reference format 0 – 10 V	Reference format 4 – 20 mA

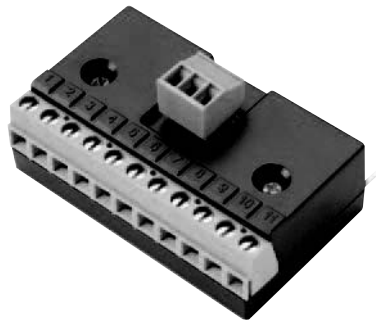


TIP

Parameter P-16 must be set to voltage mode (0 – 10 V) to support the PI controller.

9 Converter card

Type	Part number	Description
OB LT VCON A	1821 7672	110 V / 24 V converter
OB LT VCON B	1822 1947	240 V / 24 V converter



64760AXX

9.1 Supported unit types

This option is available for the following products:

- MOVITRAC® LTE-B
- MOVITRAC® LTP

9.2 Overview

There are 2 versions of the module:

- 110 V version for voltages ranging from AC 100 – 120 V
- 230 V version for voltages ranging from AC 200 – 240 V

The converter card allows the digital inputs of the drive to be controlled directly from a 110 V or 240 V control supply without the need for interfacing relays.



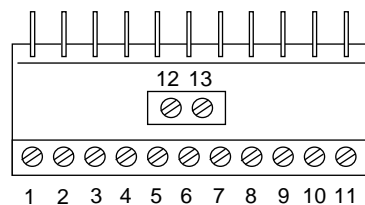
TIP

The existing analog input can still be used by connecting the analog signal input on terminal 6. Alternatively a 4th AC 110 V or AC 230 V digital input can be connected via the removable plug. All other inputs and outputs to the drive are not affected.

Analog input and digital input 4 cannot be used simultaneously.



9.3 Electrical interface



64748AXX

Terminal no.	Signal	Connection	Description
1	Neutral	Neutral	Must not be connected to 0 V
2	DI 1	Digital input 1	AC 80 – 250 V, 68 k Ω impedance
3	DI 2	Digital input 2	
4	DI 3	Digital input 3	
5	+10 V	+10 V ref out	10 V ref for analog input (pot supply +, 10 mA max., 1 K Ω min.)
6	AI / DI	Analog input (12 bit) Digital input 4	0 – 10 V, 0 – 20 mA, 4 – 20 mA "Logic 1" input voltage range: DC 8 – 30 V
7	0 V	0 V common	0 V ref for analog input (pot supply –)
8	AO / DO	Analog output (10 bit) Digital output	0 – 10 V, 20 mA analog 24 V / 20 mA digital
9	0 V	0 V common	0 V ref for analog output
10	Relay 1 contact	Relay contact	N.O. relay contact (AC 250 V / DC 30 V @ 1 A)
11	Relay 1 common	Relay common	
12	Neutral	Neutral	Must not be connected to 0 V
13	DI4	Digital input 4	AC 80 – 250 V, 68 k Ω impedance



NOTICE

The digital input terminals are optically isolated from the remaining terminals and the drive terminals. Terminals 1 and 12 are connected internally and must not be connected to terminal 7 (0 V / GND) as this could result in damage to the option card.

9.4 Technical data

Max. relay switching voltage		AC 250 V / DC 220 V
Max. relay switching current		1 A
Conformity		IP00, UL94V-0
Environmental		0 – +50 °C
Dimensions	[mm]	56 × 24 (not pins) × 14
	[in]	2.20 × 0.98 (not pins) × 0.56

9.5 Operation

9.5.1 Applications requiring 3 digital inputs and 1 analog input

This is the default setting of the drive. The analog input is connected to terminal 6 of the converter card and this connects straight to the drive's analog input and works as standard.

9.5.2 Applications requiring 4 digital inputs

The drive needs to be set up for 4 digital inputs. Further information on this setup can be found under the following parameters in the corresponding operating instructions:

- MOVITRAC® LTP: Parameter P2-01
- MOVITRAC® LTE-B: Parameter P-15

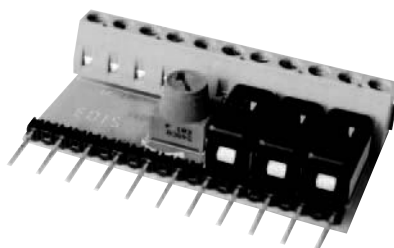
The 4th digital input is activated by one of the following options:

- applying 0 – 10 volts to terminal 6
- applying AC 110 V to terminal 13



10 Local switchboard

Type	Part number
OB LT LOCMO	1820 5607



64771AXX

10.1 Supported unit types

This option is available for the following products:

- MOVITRAC® LTE-B
- MOVITRAC® LTP

10.2 Overview

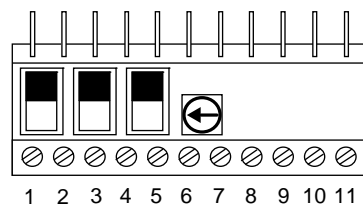
The local switchboard is an auxiliary way to enable and control the speed of the drive via the input terminal block. The board has switches which are directly connected to the digital inputs. The potentiometer is connected to the analog input.



TIP

This option should only be used for test purposes. For field application a hard wire connection must be used to control the drive.

10.3 Electrical interface



64770AXX



TIP

The terminal connections on the local switchboard are the same as those on the MOVITRAC® LTE-B / MOVITRAC® LTP unit. Refer to the operating instructions for further information.

10.4 Technical data

Conformity	IP00, UL90V-0	
Environmental	-10 – +50 °C	
Dimensions	[mm]	56 × 33 (not pins) × 16
	[in]	2.20 × 1.31 (not pins) × 0.64



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